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Professor Ernst Haeckel has published an abridgement of his recent monograph of the "Challenger" Radiolaria. It appears under the title "Grundriss einer allgemeine Naturgeschichte der Radiolarian," in a quarto volume of 266 pages, illustrated with 64 of the plates of the "Challenger" Report. The price is sixty marks.

ECHINODERMS.—The brothers Sarasin call attention (*Zool. Anz.*, x. 674) to the powers possessed by *Linckia multifora* of repairing injuries, and figure a specimen where an arm has budded at its extremity a new star fish with four new rays, but state that the madreporic body is not yet developed.

WORMS.—Beddard calls attention (*Zool. Anz.*, No. 268) to the so-called prostrate glands of earth-worms, claiming that these organs in Perichæta are the homologue of the atrium in other earth-worms. He also describes the reproductive organs of Monilogaster, which differ from those of other worms and resemble those of the limicolous forms. He shows that Claparède's division of the Oligochætes is unnatural.

MAMMALS.—August Fjelstrup describes (*Zool. Anz.*, No. 269) the histology of the skin of the black fish, *Globiocephalus melas*, and incidentally states that Eschricht's statement that the number of hairs about the lower jaw and nasal openings and their arrangement may be used in identifying foetal Cetacea is erroneous, these varying with size and development.

ENTOMOLOGY.¹

THE GRASS-EATING THRIPS.—Attention is called by Dr. Lintner in his annual report (reviewed below) to "An Unknown Grass-Pest." As the insect in question is one which I have had under observation for many years, I am able to give more definite information regarding it than is contained in Dr. Lintner's report. In fact, I feel a peculiar personal interest in the insect in question, as it was the first species upon which I made original observations; and in a little work² published thirteen years ago I gave a brief account of it.

This grass-pest is exceedingly common and widespread. It is a species of Thrips, which infests the stalk just above the upper

¹ This department is edited by Professor J. H. Comstock, Cornell University, Ithaca, N. Y., to whom communications, books for notice, etc., should be sent.

² Notes on Entomology: A Syllabus of a Course of Lectures Delivered at the Cornell University. Ithaca, 1875. (In the second edition of this work the account cited was omitted.)

joint. The young insect pierces the stem in this place, where it is tender, and, sucking the juice from it, causes it to shrink and all parts above the injury to die. It appears first each season upon June grass, and frequently, a short time after this grass has headed out, the fields will be yellow with the dead heads of the grass. Later, the insect spreads to timothy and the other grasses; but it never becomes as common upon these as upon *Poa pratensis*. The species obtains its growth within the sheath of the upper blade, at the point indicated above. After it has acquired wings it crawls forth from this secure retreat, and can be swept from the grass in great numbers. As yet I have been unable to complete the life-history of the species by determining the manner in which it passes the winter and the mode of oviposition. Neither have I been able to suggest any practicable method of preventing the increase of the species. At one time I thought that the early mowing of the infested grass, causing the infested stalks to dry and become unfit food for the young Thrips, would accomplish this purpose, but, later, I found the insects in question feeding upon leaves of grass.

In the work referred to above the species was designated as *Limothrips poaphagus* MSS., but reference was made only to the habits of the insect. A description of the species has not yet been published.—*J. H. Comstock.*

PROBABLE INCREASE IN ENTOMOLOGICAL INVESTIGATIONS.—Although the United States has taken a very prominent position as regards investigations in economic entomology, the work which the Department of Agriculture at Washington and the few State Entomologists have been able to do has not at all been commensurate with the demands of the subject. The life-history of a very large proportion of the insects that are of economic importance remains unknown. And we are unable, as yet, in many cases where the transformations of the insect are known to suggest any practicable means of preventing its ravages. The field for investigation has been altogether too large to be at all thoroughly worked by the small number of workers employed. There is now, however, a prospect of a change. The establishment by Congress of an agricultural experiment station in each of the States in connection with the agricultural colleges will result in a considerable addition to the number of investigators in economic entomology. No one of the sciences has a more immediate application to agriculture than entomology, and doubtless entomological experiments will form a prominent part of the work of the newly-established stations.—*J. H. Comstock.*

THE REPORT OF THE STATE ENTOMOLOGIST OF NEW YORK.—Dr. Lintner's report for the year 1886 has just appeared. It forms an interesting volume of about seventy-five pages. It is, however,

briefier than would have been the case but for its having been unexpectedly called for at an unusually early date, as explained in the letter of submittal.

The more important entomological events of the year noted by Dr. Lintner are the following: Owing to the ravages of the hop-aphis (*Phorodon humuli*), the hop-crop throughout the State of New York the present year has proven almost an entire failure. It is estimated that only about eight per cent. has been secured—twelve thousand bales in lieu of one hundred and fifty thousand. It is also estimated that one-third of the onion crop was destroyed by the onion-fly, *Phorbia ceparum*.

"A new attack on wheat by a saw-fly larva" is described. The larva in question crawls up the stalk, cuts it off about one inch below the head, and eats the soft green straw. One correspondent states that early in June the ground was thickly scattered with cut-off heads. An injury to strawberry plants, supposed to be caused by *Bembidium quadrimaculatum*, is discussed, but definite conclusions have not been reached. Serious injury to potato-leaves and to the foliage of carrots and parsnips by plant-lice in Massachusetts is noticed.

There are many other short articles on well-known insects. The report is concluded by a list of publications and articles published by the entomologist in various journals during the year, together with an abstract of each. The list includes nearly fifty titles, and is evidence of great industry on the part of Dr. Lintner.

SAY'S ENTOMOLOGY.—Mr. Howard, in a paper before the Entomological Society of Washington, calls attention to a very general misconception regarding the Leconte Edition of Say's works. This edition does not include all of the entomological writings of that author, and it is evident that the editor simply intended to bring together the descriptive papers of Say.

GIANT LEPIDOPTEROUS LARVÆ IN AUSTRALIA.—"The larvæ of *Chalepteryx collesi*, a large moth which has been unusually abundant during the past summer in the vicinity of Sydney, often attains the length of seven inches and is robust in proportion. The larvæ of the beautiful swift, *Zelotypia stacyi*, measures eight inches when fully grown, and I have seen several *Cossus* larvæ of similar dimensions."—A. Sidney Olliff, *Australian Museum, Sydney, N. S. Wales*, in "*The Entomologist*," Vol. XXI., p. 19.

INSECTS AS FOOD FOR MAN.—"In Australia the hairless larvæ of such insects as *Zelotypia*, *Hepialus*, *Charagia*, *Pielus*, and many wood-boring Coleoptera—particularly Longicorns and Rynchophora—are eaten raw or cooked by the aborigines and by not a few depraved members of the white community.—A. Sidney Olliff, l. c.

THE CHINCH-BUG IN IOWA.—A bulletin of the Iowa Agricultural College, by Professor Osborn, entitled *The Chinch-Bug in Iowa*, has just been issued. It includes a summary of the habits of the species and a discussion of some experiments in controlling this pest.

EMBRYOLOGY.

THE "VENTRAL SUCKERS" OR "SUCKING DISKS" OF THE TADPOLES OF DIFFERENT GENERA OF FROGS AND TOADS.¹—Thiele in this very interesting paper, shows that the singular sucker-like organs found behind the mouth and under side of the head in the tadpoles or larvæ of frogs and toads differ widely in form in different genera. They are clearly for the purpose of enabling the young larvæ to attach themselves to various fixed bodies in the water, such as weeds, the gelatinous egg-strings and masses from which they have been hatched, etc. They are thus afforded support and prevented from sinking into the ooze to smother, and their enemies thus also doubtless find them a less ready prey. These disks are also shown by Thiele not to be of the nature of suctorial organs, but are glandular, being formed wholly of thickened epidermis which is elevated, its cells becoming lengthened or columnar. There is no muscular suctorial apparatus developed in connection with them, and they are secretory, secreting a sticky mucus or slime which serves to fasten the young tadpole to its resting place. That an actual secretion is formed is proved by the fact that a slimy thread of secreted matter is drawn out from the disk if the young tadpole be forcibly withdrawn from its support. They are specifically larval organs, and persist only for one to two weeks after hatching. They may be compared to the "balancers" found behind the mouth in the larva of *Amblystoma*. In *Triton* stalked suckers are said to be present, which Balfour compares to the sessile "suckers" of larval toads and frogs. But the present writer cannot see how it is possible to homologize the sucking disk of larval gar pikes with the adhesive organs in larval Batrachians, because in the former the disk is in front of the mouth and in the latter it is usually quite behind the mouth, only in one case (*Hyla*) are the suckers found near the angle of the mouth. The larva of *Xenopus* has two long barbels at the side of the head from the sides of the upper lip. But in this last case even, it is doubtful if there is any homology with the "suckers" of other larval *Anura*. There certainly cannot be any homology between the organ of the gar-pike's larva and that of young toads and frogs, though it is probable that these organs in the latter are truly

¹ Der Haftapparat der Batrachierlarven, von Johannes Thiele. Zeitsch. f. wiss. zool. xlv. pp., 67-79, pl. x. 1887.